

CLAIMS

1. A multifunctional constant temperature refrigerator with thermal carriers comprising:
 - a compressor (1);
 - an evaporator (16);
 - a condenser (23);
 - a cabinet (37); and
 - freezing compartments (9),wherein the refrigerator further includes a closed cold air flow duct (15) and a negative thermal carrier assembly,
 - said closed cold air flow duct (15) being disposed at a back portion of the cabinet (37),
 - said evaporator (16) being placed within the closed cold air flow duct (15), said negative thermal carrier assembly being composed of a negative thermal carrier case (10) filled with negative thermal carriers and a heat pipe (12), said negative thermal carrier case (10) being disposed in each of the freezing compartments (9), a vaporization zone of said heat pipe (12) being extended into the negative thermal carrier case (10), and a condensation zone of said heat pipe (12) being extended into the closed cold air flow duct (15).
2. The multifunctional constant temperature refrigerator with thermal carriers of claim 1, wherein said heat pipe (12) is an ammonia heat pipe.
3. The multifunctional constant temperature refrigerator with thermal carriers of claim 2, wherein said negative thermal carrier assembly further includes: a plurality of accessory heat conducting fins (13), of which one end portion is extended into a closed cold air flow duct (15) and another end portion is extended into a negative thermal carrier case (10).
4. The multifunctional constant temperature refrigerator with thermal carriers of claim 3, wherein a cold air fan (2) is provided in said closed cold air flow duct (15) to speed up cold air.
5. The multifunctional constant temperature refrigerator with thermal carriers of claim 4, wherein a negative thermal carrier temperature sensor (11) is disposed in said negative thermal carrier case (10) and a positive thermal carrier temperature sensor (32) with the same precision

as the temperature sensor (11) is disposed in said freezing compartments (9).

6. The multifunctional constant temperature refrigerator with thermal carriers of claim 1 or 2 or 3 or 4 or 5, wherein a dual flow passage (25) is defined by a portion of the closed cold air flow duct (15) corresponding to the freezing compartments (9), said dual flow passage (25) having a rear flow passage (25a) and a front flow passage (25b) in which a condensation zone of the ammonia heat pipe is disposed, is separated by a passage clapboard (14), and a passage switching device (6) is disposed at an inlet of the dual flow passage (25) for switching the passages (25a, 25b).

7. The multifunctional constant temperature refrigerator with thermal carriers of claim 6, wherein said passage switching device (6) comprises a roller which has a channel therein extending upwards in a direction of the diameter, a reset gravity bar (5) is disposed at the inner surface of the roller, a hinged iron flake (4) is disposed below the roller, an electromagnet (3) is mounted at the inner surface of the air flow duct which is adjacent the inlet of the dual flow passage (25) with respect to said hinged iron flake (4), and said electromagnet (3) is placed to face said hinged iron flake (4) in parallel.

8. The multifunctional constant temperature refrigerator with thermal carriers of claim 7, wherein the passage switching device (6) has an inlet having a size matching the outlet of both the front flow passage (25b) and the rear flow passage (25a) of the dual flow passage (25), and an outlet having a size half of that of the inlet, a projected positioning bar (35) is located at the front portion of the periphery of the outlet of the passage switching device (6), and a stop block (36) corresponding to the projected positioning bar (35) is located at the inner surface of the front flow passage (25b).

9. The multifunctional constant temperature refrigerator with thermal carriers of claim 8, wherein two clapboards are symmetrically mounted within the passage switching device (6) to define a channel extending from the inlet to the outlet of the passage switching device (6).

10. The multifunctional constant temperature refrigerator with thermal carriers of claim 6, wherein a warm air flow duct (18) with two openings each at one end thereof is provided in the

cabinet (37) where one of the openings is faced to said compressor (1), a condenser (23) is disposed within the warm air flow duct (18), wherein a warming compartment (21), a positive thermal carrier case (20) and a one-way heat pipe (19) are further provided in the cabinet (37) where the positive thermal carrier case (20) and the one-way heat pipe (19) are disposed within the warming compartment (21), a condensation zone of the one-way heat pipe (19) is extended into the positive thermal carrier case (20), and a vaporization zone of the one-way heat pipe (19) is extended into the warm air flow duct (18).

11. The multifunctional constant temperature refrigerator with thermal carriers of claim 10, wherein said one-way heat pipe (19) is a one-way water heat pipe.

12. The multifunctional constant temperature refrigerator with thermal carriers of claim 11, wherein a warm air fan (24) is provided within said warm air flow duct (15).

13. The multifunctional constant temperature refrigerator with thermal carriers of claim 12, wherein a plurality of fins are respectively provided for the heat pipe (12), the single way heat pipe (19), the evaporator (16) and/or the condenser (23).